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WALKS ROUND SAN FRANCISCO.

BY W. N. LOCKINGTON.

No. III—LAKE HONDA AND SEAL ROCK.

Ancylus fragilis, the so-called fresh-water limpet, is on record in Cooper's list of the Californian mollusca from Laguna Honda, or Deep Lake, as the name, being translated, implies.

Now Laguna Honda, a pond at the bottom of a deep valley about three miles south of the Golden Gate, has been captured by the Spring Valley Water Co., and converted, by upright retaining walls, and dams, and flood-gates, into a reservoir some thirty feet deep.

It is therefore pretty clear that the Ancyli in Laguna Honda are not easy to collect, but with the object of searching for the species in a lower lake which receives its overflow, my son and I start off for the locality one windy summer morning. Our road from the cars lies across Golden Gate park, the public park of San Francisco, a long narrow strip of land commencing some distance from the city and running straight out westward to the ocean beach. The greater portion is as yet park by courtesy, as the strip of land is principally drifting sand. A small portion at the city end is laid out, and drives are made through the whole length, but nineteen-twentieths of the area either lies at the west wind's will, or is covered with a growth of the large yellow lupine (*Lupinus arboreus*) and the blue wooly-leaved lupine (*L. chamissonis vel albifrons*). As the city has chosen a site without soil for its park, it is bound to try to make its own soil, and these lupines, hardy natives of the sand, have been selected as aids in the work. They prove very efficient, but the annual appropriation for park expenses is so small, and the west wind so constant, that he would be a bold man who would prophesy that the lupines shall be victorious for a generation or two. Between the park and the valley where lies Laguna Honda, is a high hill called Sweeney's Peak, from whose summit is obtained an extensive view over the peninsula and the bay.

There is little to detain us in the ravine by which we ascend, as the season is too advanced for many flowers, but the snow-ball bush (*Symphoricarpos racemosus*) displays its white bunches of fruit in the hollows, the red-flowered *Allium acuminatum* grows

on the hill-side, and the little song-sparrows flit before us from stone to stone as we advance upwards.

While standing on a spur near the summit, gazing on the panorama of the city and its surroundings, my son, who is bent on exploring, suddenly shouts from behind a large rock, "Papa, here's a fern!" And sure enough, in that dried out spot, in the crevices of a rock five hundred feet above the sea, far from all moisture, grow numerous examples of a thick-leaved simply pinnate fern. We secure some of the plants, and on enquiring from our botanical friends, find that the curious fern is known as *Polypodium scoleri*.

It is a rough descent over the sun-baked soil and slippery bents of grass from Sweeney's Peak to the Laguna, which nestles in the deep valley between it and the opposite peak.

Castilleia parviflora and *Convolvulus occidentalis* are almost the only flowers we find on our way down, and as the water in the lake is too low and too free from vegetation to give us a chance to collect *Ancylus*, we direct our course along the flume to the lower lake, passing through a dense thicket of *Silybum marianum*, or blessed thistle, a plant which, since its probable introduction by the Spaniards, has increased to the dimensions of a nuisance.

At last, on the stems of *Sium latifolium* we find a few *Ancyli*, tiny little vesicles of shells, which would certainly be overlooked by any one not specially searching for them, since they are only about a third of an inch long, almost colorless, applied to the stem by the whole of their under surface, and very much flatter above than their namesakes of the ocean beach. These "fresh-water limpets," it may be as well to remark, are but distant relatives of the real limpets, they are "Pulmonata," or air breathers, like the fresh-water snails and the land snails, while the limpets are provided with gills like other univalves of the ocean. This is one of those cases, so many of which occur in the animal kingdom, where considerable outward resemblance masks radical structural differences.

As this is a rambling paper, and the last that we shall piece together from our rambles on this wind-stricken peninsula, we will lengthen out our walk northwards until we reach the Seal Rock road, along or near which we will trudge till we descend to the ocean beach close to the extensively-advertised Seal Rock. Seal Rock is one of the greatest lions of San Francisco, or

rather, it is the home of San Francisco's lions, those sleek and well-fed sea lions, which are protected from slaughter by special legislation, that they may, in conjunction with wasteful human fishers, destroy the "harvest of the waters." The rock is within easy rifle-shot of the terrace of the Cliff House hotel, yet it is crowded with sea-lions taking their ease in all kinds of positions, evidently fully aware that they will not be harmed. Most of the colony are dozing in the sun, occasionally opening their eyes, raising their heads, and perhaps uttering their characteristic howl; but some more active, are swimming among the breakers, their heads alone visible above the water. "I cannot understand how those things can bear such a life," remarked a well-dressed woman near me, with a look of disgust. And this when the creatures were basking in the sun and playing in the water with the most evident enjoyment—perhaps they were thinking the same of us—who can tell?

The long stretch of sandy beach between Seal Rock and the Ocean House does not present us with many forms of marine life that do not also occur in the Bay of San Francisco. *Cardium corbis* and *Macoma nasuta* are common, and so is the pretty little light-reddish bivalve *Mya salmonea*. At intervals you may pick up the test of a very thin and flat cake-urchin, *Echinarachnius excentricus* A. Ag., looking like a large wafer; its height from crown to mouth so small that you almost wonder where the creature lived, and how it could ever move its heavy covering.

On the sand banks that form the bar at the entrance of the harbor, at a depth of six or seven fathoms, this sea-urchin can be procured alive; its test is then covered with a thick array of small spines, so closely set that when the creature retracts its suckers it is difficult to make out the "petals" or curved outlines of the ambulacral pores through which the suckers protruded. The name "*excentricus*" is very appropriate. The system of calcareous plates forming the crown (apical system) and containing the genital and ocular plates with their pores, is not in the centre as it is in the allied *E. mirabilis*, but is approximated to the anterior extremity of the test; neither is the mouth in the center of the underside. Two other species of sea-urchins, or Echini, glorying in the names of *Strongylocentrotus franciscanus* and *S. purpuratus* occur along the ocean beach at points not very far distant from San Francisco, but are not found in its immediate

neighborhood. The first of these attains a large size, the test or shell, denuded of its long spines, measuring five inches or more in diameter; the second has short spines, and is about two inches across. These are "regular sea-urchins," that is to say, they belong to that sub-order of the Echini which has circular, high, sometimes almost globular tests, with the five ambulacral areas at equal distances and of equal dimensions, pierced with rows of pores continuous from the mouth below to the apical system above, which latter contains not only the "ocular" and "genital" plates, but also the posterior termination of the digestive canal. The cake-urchin before mentioned, like all its near relatives, has the anus on the under side, thus departing farther from the "radiate" type, and the rows of ambulacral pores for the exit of the suckers are confined to the upper side of the test.

Along the upper portion of the sandy beach, at points where there are no cliffs but where the land meets the sea in rolling ridges of sand, may be found several plants which do not occur in other situations. Among these are *Frinseria chamissonis* and *F. bipinnatifida*, two compositæ with inconspicuous flowers and hispid fruits, covering large areas with their trailing stems and glaucous foliage; *Abronia cycloptera*, a relative of the garden flower commonly called four-o'clock, with its upright bunches of sweet-scented reddish flowers; *Heliotropium curassavicum*, one of the *Boraginaceæ*, with curled-up spikes of small white flowers, and thick leaves, and the yellow-flowered *Ænothera cheiranthifolia*.

On the cliffs near by, *Sedum spathulifolium* makes a show with its bunches of yellow flowers, mingled, perhaps, where the soil is deeper, with *Aster chamissonis* and the golden-rod, *Solidago californicum*. Here is a large area of cliff face covered with the long trailing stems of *Mesembryanthemum dimidiatum*, the three sided oblong leaves glistening in the sun, and the large deep-purple flowers glowing at intervals like rubies. It is the monarch of the sea-side flowers, and is worthy of a place in the flower-garden, but must not be planted in too rich soil, or it will run to stems and leaves, and forget to bloom.

On the hill-sides the most conspicuous plant is the "bladder-weed," *Astragalus menziesii*, not in bloom now save a few belated blossoms, but hung all over with the bladder-like pods from which its vernacular title is derived. The seeds in the ripe pods

rattle in the wind and the name of "rattle-weed" has thus arisen. A third name is the Spanish title of "loco" or "mad" plant, from the effects of its poisonous foliage upon the hungry cattle which are occasionally tempted by its green foliage and succulent stems—green and succulent when all around is brown and scorched, when even the "burrs" of the burr-clover (*Medicago denticulata*) are scarce and baked to chips, and the bents of grass are broken down into chaff—to feast upon what in times of greater plenty they avoid.

Although, broadly speaking, there are no trees on the peninsula of San Francisco, except the thickets of scrub oak (*Quercus agrifolia*) which clothe some of the more sheltered hills and valleys, yet the ravines of the few permanent springs display a crop of willows, mingled with a few examples of *Myrica californica*; and cliffs with a northern aspect are in some spots made beautiful by an abundant growth of *Heteromeles arbutifolia*, a showy rosaceous shrub, with red berries like the European hawthorn, but no thorns. Earlier in the season it blooms into a mass of showy bunches.

Ceanothus thyrsiflorus, a few starvling plants of which may be found among or near the willows, is, in more favored localities, one of the loveliest of shrubs, or rather trees, for it grows to the size of an apple tree. Covered all over with lilac-like bunches of odoriferous blue flowers (whence its local name of "blue myrtle"), and growing in extensive thickets over terraces and uplands, it is a living contradiction of the theories of color purists who deny that blue flowers and green leaves can be beautiful.

If we pick our way through the sand and over the hard-baked bed of what in winter is a watercourse, to one of the little coves which lie between the cliffs, we shall probably find numerous specimens of the curious little crustacean, *Hippa analoga* Stimpson. This little fellow lives in the sand between tide-marks, and although in the vernacular confounded with the species of *Orchestia* and *Allorchestes*, under the general term of "sand hopper," really belongs to a very different and higher division of the class Crustacea than that which includes his companions of the sand. He, or rather she, for the female is much the larger, has the body longer than wide, a narrow abdomen tucked under the body like that of an ordinary crab, five pairs of limbs, eyes

borne on stalks, and very conspicuous antennæ and mouth appendages. Thus he belongs to the *Decapoda* or ten-footed crustacea, while the other sand-hoppers, with seven pairs of limbs and sessile eyes, are in a lower sub-class. His great forte appears to be digging in the sand, which he does backwards, and with astonishing rapidity, disappearing in an attitude similar to that of a diving duck. Securing a few of these lively fellows, we return up the watercourse and across the sandy prairie to the road, gathering, as we proceed, a few flowering stalks of the yellow *Bahia lanata* and a twig of *Croton procumbens*, with its light green berries.

I think it is about time that the notion that a species must necessarily be named after some peculiarity that it possesses, should pass into the limbo of exploded ideas. There are now so many species of animals known, that it is, in many cases, impossible to define the differences between those which are nearly related in one word—it needs at least five lines of writing to do it. Two species differing in twenty particulars, no one of them, perhaps, very important, cannot be correctly distinguished by incorporating one of these points of difference in a specific name, and it frequently happens that a name which correctly describes one species will apply equally well to another species which has other peculiarities rendering it totally different. Thus *Sebastes ruber*, the red rock cod, is red enough, but there are two or three other red species of the same genus in our waters; and among the shrimps of the genus *Hippolyte*, *H. brevirostris*, although it has a short rostrum, is excelled in that particular by other species. As species are distinguished from each other not by one but by several peculiarities, it sometimes happens that the very character which, from its conspicuousness, has been incorporated into the specific name, may be wanting in an individual which yet belongs to the species; thus *Asterias ochracea*, the ochreous star-fish (our common species), is quite as frequently deep purple as yellow, and *Astacus nigrescens*, the blackish cray-fish, is usually of quite a light tint.

The great necessity of zoölogical and botanical nomenclature is not so much to have a descriptive name for every species as to have one fixed, indisputable name by which each shall be universally known. This is an end difficult to reach, but will, at least in the majority of cases, be at length attained. Isolated workers in different countries, or distant parts of the same country, not

having access to the results of each other's labors, have separately described the same species, and have each given it a name. Perhaps one has called it *obesus* because it was short and thick, another, *sanguineus* because it was red, a third, *macrodactylus* because it had a large toe, while a fourth has named it *smithii* after his friend, John Smith.

But it is now a recognized rule among naturalists, and it is a rule that ought to be rigidly enforced, that priority of publication shall give precedence, and as soon as it can be ascertained which of the names was first given, provided it was accompanied by a description, that name shall in future be the name, no matter whether it is good or bad Latin, or even whether it is rightly or wrongly spelled. It is the baptismal name, and, like that of an infant, must ever remain its name. It is only by keeping to this rule that we can ever reach bottom in scientific nomenclature; if every aggressive genius were allowed to change a well-known name for one that, in his estimation, fits it better, and if every Latinist, ignoring every consideration but those belonging to his pet grammar, might alter terminations and orthography at his will, the synonymy of species would be endless. The same rules apply to specific names that apply to the surnames or cognomens of human beings.

When men were fewer, and proper names like John and William were the only recognized ones, the various Johns and Williams were distinguished from each other as John the baker, John the butcher, etc., or personal peculiarities were made a note of, and William Tallboy and John Short, with other sometimes very curious names arose; or a man leaving his native town of, let us say, Lincoln, became known in his new residence as John of Lincoln. These names stuck to the families, the members of which changing their trades, or possessing different physical peculiarities, often become the antipodes of their names. Thus, John Baker may be an iron monger, John Short may be tall, William Armstrong may be no stronger in the arm than John Smith, and John Gross may be a Lilliputian. I must now beg pardon of our esteemed corresponding secretary of the California Academy of Sciences, because I have taken the liberty to append his name to a species of fish which I believe has hitherto not been described. Many other names would fit it; it is long, slender and round, so are all the tribe it belongs to; it is brown, so

are others that are nearly related; it has two rows of teeth on each side of the mouth, so have all its family; there are ten teeth in the front row and nine in the back; this is characteristic, but it would puzzle the best Latinist to put it in one word; and it has eleven gill openings, and this might be expressed by a compound Latin name which would be awkwardly long, and after all would not mean with eleven gill openings, but simply with eleven openings, so that on the whole I prefer *stoutii*; and *stoutii*, with the doctor's permission, it must be, unless some one has anticipated me in describing the fish.

Bdellostoma stoutii nov. sp. Eleven gill openings on each side; ten teeth in the anterior and nine in the posterior series. $15\frac{1}{2}$ " long. Eel river, Humboldt county.

It is rather singular that this fish, which is abundant in Eel river, and is sold for food, and also occurs in this harbor, should hitherto have escaped notice. I believe it to be the only species of its genus hitherto found on the Pacific coast of North America; and it differs from *Bdellostoma polytrema*, a species which occurs along the coast of Chili, both in the number of its gill-openings and that of the teeth, *B. polytrema* having fourteen of the former and twelve of the latter in each series.

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THE BENEFICIAL INFLUENCE OF PLANTS.

BY J. M. ANDERS, M.D., PH.D.

A GOOD deal of attention has recently been given to the subject of the sanitary relations of plant life. Since plants constitute so great a factor in the organic world, a study of their functions necessarily becomes interesting and important. As every one knows, the knowledge of these processes is being rapidly unfolded, and clearly, the way to render this most useful is to examine into their practical relations; for our appreciation of plants and flowers must, to a great extent, go hand in hand with the increase in knowledge concerning their influence on our health and welfare. As our information in this direction increases we shall be more ready to acknowledge how much we owe to vegetation; still it is to be hoped that our ideas will never revert to the extravagant theories of the ancients, for we find that mythology credits trees with marvelous powers, such as their